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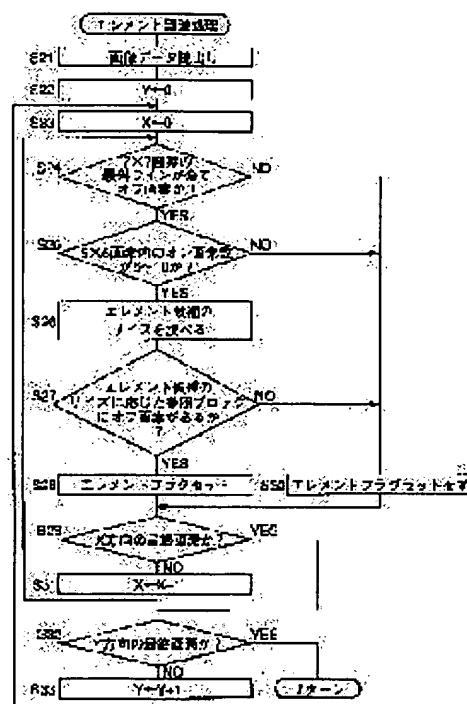
(51)Int.CI.	G06T	7/00
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	G06T	7/60
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(21)Application number : **2000-125947** (71)Applicant : **MINOLTA CO LTD**
(22)Date of filing : **26.04.2000** (72)Inventor : **MORI TOSHIHIRO**

(57)Abstract:

PROBLEM TO BE SOLVED: To provide the pattern detector of simple constitution capable of highly accurately detecting a specified pattern at a high speed.

SOLUTION: This pattern detector for detecting the specified pattern included in images is provided with a means for binarizing image data and a partial image recognition means for recognizing a partial image provided with a center- omitted shape which is a part of the specified pattern included in the binarized image data. The partial image recognition means decides a recognition object satisfying the condition that at least one off-pixel is present in a reference block composed of a pixel under consideration in a block area and also the pixels present in the peripheral prescribed range as the partial image while scanning the respective block areas in the image data provided with a size for housing the partial image.



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CLAIMS

[Claim(s)]

[Claim 1] In the pattern detection equipment which detects the specific pattern contained in an image A partial image recognition means to recognize two or more partial images which are contained in the image data by which binarization was carried out with the binarization means which carries out binarization of the image data, and the above-mentioned binarization means and which constitute a specific pattern, Pattern detection equipment characterized by having a score setting means to set up a score to each partial image, based on similarity with the criteria image equipped with the partial image recognized by the above-mentioned partial image recognition means, a predetermined configuration, and size.

[Claim 2] Furthermore, pattern detection equipment according to claim 1 characterized by having a pattern judging means to compute the sum total score about the partial image contained in the field equipped with the size to which the above-mentioned specific pattern is restored, and to judge a specific pattern based on the calculation result.

[Claim 3] In the pattern detection approach of detecting the specific pattern contained in an image The partial image recognition step which recognizes two or more partial images which are contained in the image data by which binarization was carried out in the step which carries out binarization of the image data, and the above-mentioned binarization step, and which constitute a specific pattern, The pattern detection approach characterized by having the score setting step which sets up a score to each partial image based on similarity with the criteria image equipped with the partial image recognized by the above-mentioned partial image recognition step, a predetermined configuration, and size.

[Claim 4] The step to which it is the record medium which recorded the pattern detection program used in case the specific pattern contained in an image is detected, and in which computer read is possible, and this pattern detection program carries out binarization of the image data, The partial image recognition step which recognizes two or more partial images which are contained in the image data by which binarization was carried out in the above-mentioned binarization step, and which constitute a specific pattern, The record medium which is characterized by having the score setting step which sets up a score to each partial image based on similarity with the criteria image equipped with the partial image recognized in the above-mentioned partial image recognition step, a predetermined configuration, and size and in which computer read is possible.

[Translation done.]

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14-21

(21)Application number : **2000-125949**
(22)Date of filing : **26.04.2000**

(71)Applicant : **MINOLTA CO LTD**
(72)Inventor : **MORI TOSHIHIRO**

(54) DEVICE AND METHOD FOR DETECTING PATTERN

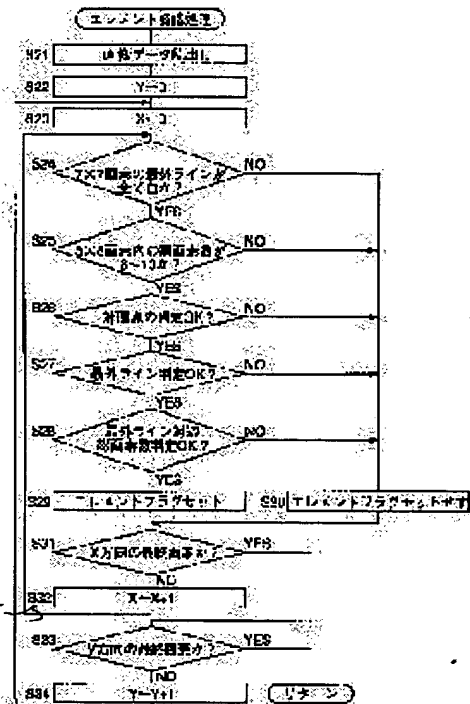
(57)Abstract:

PROBLEM TO BE SOLVED: To provide a pattern detector of simple constitution capable of highly accurately detecting a specified pattern at a high speed.

SOLUTION: This pattern detector for detecting the specified pattern included in images is provided with a means for binarizing image data and a means for recognizing a partial image provided with a prescribed shape which is a part of the specified pattern included in the binarized image data. The means for recognizing the partial image evaluates at least one of a pixel at the opposite vertex of respective rectangular block areas, the pixel on an outermost line and the pixel on the opposite side of the outermost line based on a prescribed condition for the block areas in the image data of a size for housing the partial image and judges a recognition object inside the block area satisfying the prescribed condition as the partial image.



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CLAIMS

[Claim(s)]

[Claim 1] In the pattern detection equipment which detects the specific pattern contained in an image Are contained in the image data by which binarization was carried out with the binarization means which carries out binarization of the image data, and the above-mentioned binarization means. It has a partial image recognition means to recognize the partial image equipped with the predetermined configuration which are some above-mentioned specific patterns. About the block field of each rectangle in the image data which the above-mentioned partial image recognition means equipped with the size to which the above-mentioned partial image is restored Pattern detection equipment characterized by evaluating at least one of the pixel in the opposite top-most vertices of this block field, the pixel in outermost Rhine, and the pixels in the opposite side in outermost Rhine based on predetermined conditions, and judging the candidate for recognition in the block field which fulfills these predetermined conditions to be a partial image.

[Claim 2] Pattern detection equipment according to claim 1 with which the above-mentioned partial image is characterized by being the image of an approximate circle form.

[Claim 3] Pattern detection equipment according to claim 2 with which the above-mentioned partial image recognition means is characterized by evaluating the pixel in the opposite top-most vertices of the above-mentioned block field based on the conditions that the number of black pixels of the group of the pixel in these opposite top-most vertices is less than two.

[Claim 4] Pattern detection equipment according to claim 2 or 3 with which the above-mentioned partial image recognition means is characterized by evaluating the pixel in outermost Rhine of the above-mentioned block field based on the conditions that the number of black pixels in this outermost Rhine is below a predetermined number.

[Claim 5] Pattern detection equipment according to claim 2 to 4 with which the above-mentioned partial image recognition means is characterized by evaluating the pixel in the opposite side in outermost Rhine of the above-mentioned block field based on the conditions that the number of black pixels in the opposite side in this outermost Rhine is below predetermined.

[Claim 6] In the pattern detection approach of detecting the specific pattern contained in an image Are contained in the image data by which binarization was carried out in the step which carries out binarization of the image data, and the above-mentioned binarization step. It has the partial image recognition step which recognizes the partial image equipped with the predetermined configuration which are some specific patterns. About the block field of each rectangle in the image data which the above-mentioned partial image recognition step equipped with the size to which the above-mentioned partial image is restored At least one of the pixel in the opposite top-most vertices of this block field, the pixel in outermost Rhine, and the pixels in the opposite side in outermost Rhine is evaluated based on predetermined conditions. The pattern detection approach characterized by having the step which judges the candidate for recognition in the block field which fulfills these predetermined conditions to be a partial image.

[Claim 7] The step to which it is the record medium which recorded the pattern detection program used in case the specific pattern contained in an image is detected, and in which computer read is possible, and this pattern detection program carries out binarization of the image data, It has the partial image recognition step which recognizes the partial image equipped with the predetermined configuration which are some above-mentioned specific patterns contained in the image data by which binarization was carried out in the above-mentioned binarization step. The above-mentioned partial image recognition step about each rectangle block field in the image data of the size to which the above-mentioned partial image is restored At least one of the pixel in the opposite top-most vertices of this block field, the pixel in outermost Rhine, and the pixels in the opposite side in outermost Rhine is evaluated based on predetermined conditions. The record medium characterized by having the step which judges the candidate for recognition in the block field which fulfills these predetermined conditions to be a partial image.

[Translation done.]

PATENT ABSTRACTS OF JAPAN

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(21)Application number : 2000-125948

(71)Applicant : MINOLTA CO LTD

(22)Date of filing : 26.04.2000

(72)Inventor : MORI TOSHIHIRO

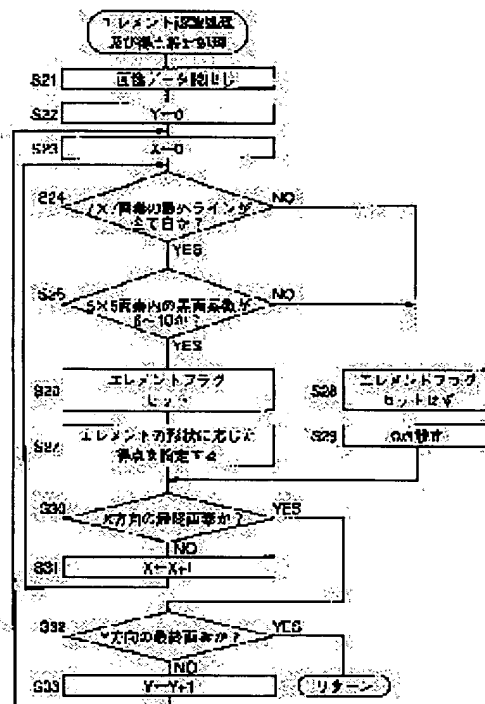
(54) DEVICE AND METHOD FOR DETECTING PATTERN

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a pattern detector of simple constitution capable of highly accurately detecting a specified pattern at a high speed.

SOLUTION: This pattern detector for detecting the specified pattern included in images is provided with a means for binarizing image data, a means for recognizing plural partial images constituting the specified pattern included in the binarized image data and a means for setting points to the respective partial images on the basis of the similarity of the recognized partial images and a reference image provided with prescribed shape and size.

*Pattern Recognition
Based on
Template matching
382/218*



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CLAIMS

[Claim(s)]

[Claim 1] In the pattern detection equipment which detects the specific pattern contained in an image Are contained in the image data by which binarization was carried out with the binarization means which carries out binarization of the image data, and the binarization processing means. It has a partial image recognition means to recognize the partial image equipped with the extraction configuration which are some above-mentioned specific patterns. While the above-mentioned partial image recognition means scans each block field in the image data equipped with the size to which the above-mentioned partial image is restored Pattern detection equipment characterized by judging the candidate for recognition which fulfills the conditions that at least one off pixel exists in the reference block which consists of a pixel in the view pixel in this block field, and the predetermined range of the circumference of it to be a partial image.

[Claim 2] Pattern detection equipment according to claim 1 with which size of the above-mentioned reference block is characterized by being adjustable corresponding to the size for [which is contained to the block field in the above-mentioned image data] recognition.

[Claim 3] In the pattern detection approach of detecting the specific pattern contained in an image Are contained in the image data by which binarization was carried out in the step which carries out binarization of the image data, and the above-mentioned binarization step. It has the partial image recognition step which recognizes the partial image equipped with the extraction configuration which are some above-mentioned specific patterns. While the above-mentioned partial image recognition step scans each block field in the image data equipped with the size to which the above-mentioned partial image is restored The pattern detection approach characterized by having the step which judges the candidate for recognition which fulfills the conditions that at least one off pixel exists in the reference block which consists of a pixel in the view pixel in this block field, and the predetermined range of the circumference of it to be a partial image.

[Claim 4] The step to which it is the record medium which recorded the pattern detection program used in case the specific pattern contained in an image is detected, and in which computer read is possible, and this pattern detection program carries out binarization of the image data, It has the partial image recognition step which recognizes the partial image equipped with the extraction configuration which is included in the image data by which binarization was carried out in the above-mentioned binarization step, and which are some above-mentioned specific patterns. While the above-mentioned partial image recognition step scans each block field in the image data equipped with the size to which the above-mentioned partial image is restored The record medium which is characterized by having the step which judges the candidate for recognition which fulfills the conditions that at least one off pixel exists in the reference block which consists of a pixel in the view pixel in this block field, and the predetermined range of the circumference of it to be a partial image and in which computer reading is possible.

[Translation done.]